



# Afloat Spectrum Management News

Volume 7, 2010

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## THIRDFLT Standing Plans

AESOP Version 2.1 includes Operational Task Communications (OPTASK COMM) standing plans, developed for use in each fleet area. Typically, each fleet area has at least three Carrier Strike Group (CSG) and Expeditionary Strike Group (ESG) standing plans for use. Standing plans are pre-populated with baseline circuit requirements and approved frequencies. (See "Standing Plans or Templates," *Afloat Spectrum Management News*, Volume 6 for additional information.)

As part of a continuing effort to support the Communication Planner, the AESOP team was tasked to update the standing plans for Third Fleet (THIRDFLT). The intent of these updates was to standardize the basic standing plans being used in the fleet, as well as to make the plans smaller, due to the severe shortage of available frequencies. The existing plans were originally written in 1988 and various frequencies in the plans are no longer authorized. Also, some of the bands used in the existing plans are no longer available for fleet use.

The THIRDFLT standing plans were re-written and the set now contains four CSG plans, one ESG plan, and two Amphibious Ready Group (ARG) plans. The substitution of ARG plans for ESG plans was necessary because amphibious groups have reverted back to the ARG composition (amphibious ships only) for the majority of operations and deployments. The remaining ESG plan contains the additional nets to support the cruiser and/or destroyer assets in the group. These new THIRDFLT standing plans will be included with AESOP and posted on AESOP's Secret Internet Protocol Router Network (SIPRnet) website, as well as the Spectrum Supportability Collaboration at Sea (CAS) SIPRnet website, for quick access by the fleet. Contact the AESOP Office for specific instructions (see "Editor's Corner" on page 2).

In order to use one of the THIRDFLT standing plans, the Strike Group (SG) Spectrum Planner must contact the Fleet Commander or appropriate Navy-Marine Corps Spectrum Office (NMCSO) for an assigned plan.

Once a standing plan is assigned to the SG, it can be imported into AESOP and used as a draft "Strawman" OPTASK COMM. The Communications Planner must assign guard requirements to nets, verify and assign keying material to nets, establish the net restoral plan, and make other minor adjustments to finalize the OPTASK COMM. (See "Communication Planning Tips..." on page 4.)

All OPTASK COMM standing plans can be located within AESOP. "Appendix F - Standard Emission Designators, Line Numbers, Circuit Titles, and Net Explanations" of *OP-3840, Electromagnetic Compatibility Criteria for Navy Systems (U)*, has replaced the NAVY-WIDE OPTASK COMM message and is the basis for the net plan to be used in OPTASK COMM standing plans. The AESOP Team appreciates fleet feedback in order to improve the standing plans.

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## AESOP 2.1 Database Update

Visit the AESOP Secret Internet Protocol Router Network (SIPRnet) website to obtain download instructions for the recent update to the AESOP Version 2.1 Database. This revision to the database includes newly commissioned ships, updates to equipment and equipment inventory, and changes to the communication circuits and emission designators used in OPTASK COMM messages. "Appendix F - Standard Emission Designators, Line Numbers, Circuit Titles, and Net Explanations" of *OP-3840, Electromagnetic Compatibility Criteria for Navy Systems (U)*, was updated to reflect current U.S. Navy Link-4A operations.

Spectrum Planners should periodically check the AESOP SIPRnet website for updates to software, databases and fleet documents. Contact the AESOP Office (see "Editor's Corner" on page 2) for specific instructions.



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## Editor's Corner

Afloat Spectrum Management News is written, edited, and published by the AESOP Team. Opinions expressed by the publishers are their own and are not to be considered an official expression of the U.S. Government or the Department of the Navy. For assistance, please contact the AESOP Office at the address listed below.

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# Navy-Marine Corps Spectrum Offices and AESOP

When generating a frequency plan message with AESOP, the Spectrum Planner will see multiple addresses automatically included in the Information (INFO) line of the message. These are the operating area's numbered fleet command, the AESOP Office, and applicable area frequency coordination offices, including Navy-Marine Corps Spectrum Offices (NMCSOs).

Naval Network Warfare Command (NAVNETWARCOM) has established the Navy-Marine Corps Spectrum Center (NMSC) as the center of excellence for day-to-day spectrum certification and radio frequency (RF) spectrum management in support of all Navy-Marine Corps activities. The NMCSOs advise and assist the NMSC with regional spectrum management and are tasked to provide spectrum management support to Navy-Marine Corps forces and activities afloat and ashore. These new NMCSOs, aligned under the NMSC and located worldwide, are the Spectrum Planner's primary resource for obtaining the necessary and official authorization to use the frequencies outlined in the AESOP Radar Assignment or Operational Task Communications (OPTASK COMM) Plan.

Supporting the fleet warfighter are NMCSOs within the United States and its Possessions (US&P), including NMCSO Pacific in Honolulu, HI; NMCSO Atlantic in Norfolk, VA; NMCSO South West in San Diego, CA; NMCSO Guam; and NMCSO North West in Puget Sound, WA.

Supporting the fleet warfighter are NMCSOs in areas outside US&P (OUS&P) including NMCSO Central Command (CENTCOM) in Bahrain; NMCSO Europe in Naples, Italy; and NMCSO Far East in Yokosuka, Japan.

The numbered fleet spectrum offices and the NMCSOs keep the AESOP Office abreast of current littoral

spectrum restrictions and operational guidance for their respective areas of the world. Select NMCSOs assist the fleet commanders to ensure standing OPTASK COMM plans are current and supportable within the operational areas of interest and maintained within AESOP. Ongoing collaboration and communication between the AESOP Office and the spectrum offices ensure that the AESOP software provides the fleet with valid frequency plans. Changes are included in database updates, which are posted on the AESOP Secret Internet Protocol Router Network (SIPRnet) website for download.

Requests for AESOP assistance should be directed first to the AESOP Office, as generally, the use of the current version of AESOP with any applicable database updates downloaded and installed, will assure electromagnetic compatibility and compliance with national and international frequency regulations. Occasionally, the Spectrum Planner may need to contact an NMCSO office to request specific frequencies or troubleshoot unresolved problems. AESOP automates, to the maximum extent possible, the routine and required coordination between AESOP Spectrum Planners and the NMCSOs.

By including the appropriate regional NMCSOs on the AESOP Radar Assignment or OPTASK COMM Plan, the Spectrum Planner is officially providing notification of intention to radiate on those frequencies, so that if recent changes or special circumstances have caused the AESOP-generated frequency plan to be problematic, the NMCSO can intervene. The AESOP Office also reviews fleet frequency plans and will intervene if needed.

Spectrum Planners are assured that the NMCSOs and the AESOP Office work together to ensure naval deployments have maximum legal access to the spectrum as necessary to achieve their missions.

# Understanding Link-4A

As one of several tactical data links now in operation in the Department of Defense (DoD), LINK-4A has played an important role by providing digital surface-to-air, air-to-surface, and air-to-air tactical communications since the late 1950s. The historical LINK-4 was initially designed to replace voice communications for the control of tactical aircraft. The use of LINK-4A has since been expanded to include digital data transfer between surface and airborne platforms in a variety of ways.

Because Link-4A conforms to the specification for Tactical Digital Information Link (TADIL) C, the link's technical designation within the United States is TADIL C. The names Link-4A and TADIL C are interchangeable. Originally installed on Navy F-4 aircraft, LINK-4A was also used on all subsequent fighter aircraft, and is now installed on Navy F/A-18 Hornets and E-2C Hawkeyes.

Historically, the 300-325 megahertz (MHz) band has been used for all LINK-4 nets in shipboard communications plans, presumably because the shipboard equipment would only tune to this small portion of the ultra high frequency (UHF) band. This limitation, coupled with the abnormally wide 60 kilohertz (kHz) bandwidth required for these links, has made it difficult to find a sufficient number of frequencies with proper separation to cover multiple communications plans in the same area. The following communications line numbers were used to manage LINK-4A nets:

**DT626 Ship's Inertial Navigation System (INS) (SINS)**  
**DT627 Automatic Carrier Landing System (ACLS)**  
**DT628 Air Intercept Control (AIC)**  
**DT629 DOLLY**

During research for the new THIRDFLT standing plans (see "THIRDFLT Standing Plans" on page 1), updated information about LINK-4A usage and equipment covering the nets was received.

**Ship's Inertial Navigation System:** A single AN/SRC-40, the shipboard transceiver, is installed on each large-deck ship (CVN/LHA/LHD). This equipment is the only transceiver connected to the SINS and updates the Carrier

Aircraft Inertial Navigation System (CAINS). The SRC-40 operates from 300-325 MHz in 100 kHz steps and is used only on SINS to transmit the INS data to aircraft prior to takeoff or to update it while in flight. LINK-4A/SINS must be between 300-325 MHz and frequencies must be in 100 kHz steps.

**Automatic Carrier Landing System:** The shipboard ACLS works over two separate radio frequency (RF) systems: the LINK-4A data link and the AN/SPN-46 pulsed radar system. These two systems work together to safely land an aircraft. The SPN-46 operates in X band and Ka band, but also has a "monitor receiver" that operates from 300-325 MHz. This system uses 1960s technology and tunes in 100 kHz increments. This monitor receiver must hear the UHF LINK-4 ACLS signal between 300-325 MHz in order for its upper bands to properly operate. Like LINK-4A/SINS, the LINK-4A/ACLS must be between 300-325 MHz and frequencies must be in 100 kHz steps.

**Air Intercept Control/DOLLY:** For the other two LINK-4A data links (AIC/DOLLY), research on current usage revealed that there are no frequency or tuning limitations. On the ship, the AIC and DOLLY data links are covered by the AN/URC-93 and AN/GRC-171B UHF transceivers.

LINK-4A/AIC and LINK-4A/DOLLY may be operated on any properly assigned frequency between 225-380 MHz and use the normal 25 kHz tuning increment.

**Aircraft Usage:** On the aircraft side, the transceivers used on all four LINK-4A links are of the AN/ARC-210 family, which have no frequency or tuning limitations.

Based on this investigation of shipboard usage of LINK-4A nets in standing communications plans, the frequency range and tuning guidance for communications line numbers used to manage LINK-4A nets was re-defined as follows.

<b>DT626 SINS</b>	<b>300-325 MHz</b>	<b>100 kHz</b>
<b>DT627 ACLS</b>	<b>300-325 MHz</b>	<b>100 kHz</b>
<b>DT628 AIC</b>	<b>225-380 MHz</b>	<b>25 kHz</b>
<b>DT629 DOLLY</b>	<b>225-380 MHz</b>	<b>25 kHz</b>

## USN-USMC Spectrum Management Conference

The 31st U.S. Navy-U.S. Marine Corps (USN-USMC) Spectrum Management Conference will be held 1 through 5 March 2010 in San Diego with the theme of "Spectrum Management Challenges for the 21st Century." This annual seminar provides a forum for spectrum management issues and concerns from throughout the fleet and Marine forces. AESOP and Equipment Location - Certification Information Database (EL-CID) technical assistance sessions will be held prior to the conference. For more details and registration information, send an e-mail to [spectrumconf@navy.mil](mailto:spectrumconf@navy.mil).





## U.S. Navy Compliance

AESOP Version 2.1 was distributed in November 2008. The AESOP Office has finished an extensive certification coordination effort and achieved the authority to operate (ATO) for U.S. Navy computers and networks, including the Shipboard Information Technology for the 21st Century (IT-21) network, Navy Education and Training Command (NETC) Training Network (TRANET), the Navy-Marine Corps Intranet (NMCI), and Naval Net Warfare Command (NAVNETWARCOM) ONE-NET. Specific identification numbers for accreditation may be required for installing AESOP Version 2.1 at your location and are listed below.

- ATO: 14 APRIL 2009
- Department of Navy Application and Database Management System (DADMS)
  - 52038
- NMCI
  - RFS-106579
  - ISF-117477
- IT-21
  - PSC-2009-00076
- NETC TRANET
  - NETC\_N00076\_TRANET-C\_S
  - NETC\_N00076\_TRANET\_U
- OCONUS Navy Enterprise Network (ONE-NET)
  - Reference DADMS Number 52038 when calling the ONE-NET Help Desk for installation.

# Communication Planning Tips: Guard Key Assignment

This is the second in a series of articles designed to support the Communication Planner in using AESOP to develop an Operational Tasking Communication (OPTASK COMM). (See "Communication Planning Tips: KEYMAT Identification and Assignment," *Afloat Spectrum Management News*, Volume 6 for additional information.)

One of the basic steps in the development of an OPTASK COMM is the establishment of guard requirements for nets. The establishment of guard requirements must consider the number of transmitters, receivers, crypto and other types of equipment that will be required by each ship to maintain communications within the Strike Group (SG). Guard requirements are established by the cognizant authority, SG Commander, ship, or embarked command. If a ship is tasked to guard more nets than they have equipment to support, the ship is considered to be over-subscribed.

All known or obvious guard requirements should be added to the nets prior to sending out the draft "Strawman" OPTASK COMM for feedback. Participating ships in receipt of the "Strawman" OPTASK COMM must review it to ensure they can support the communications guard requirements tasked by the cognizant authority and provide feedback to the Communications Planner. Once feedback on the draft OPTASK COMM is received, guard requirements may need to be adjusted.

Guard Keys: AESOP uses pre-established guard keys to assign guard requirements. For common nets in the communication plan, the topology and purpose of the net indicates the appropriate guard key for the circuit. For example:

**G - Guard Always:** The following simplex nets receive a "G" guard key because they require continuous 24-hour coverage: bridge-to-bridge nets, fleet tactical warning net, NAVY RED net, primary command nets, primary coordination and reporting (C&R) nets, and land-launch nets.

**L - Listen Only:** The following nets receive a "L" guard key because the net is receive-only, receive side of a duplex net, or a downlink: broadcast nets, receive side of Digital Wideband Transmission System (DWTS), and Satellite Communication (SATCOM) downlinks.

**R - As Required:** The following nets receive a "R" guard key because they do not require continuous guard: inport nets, degaussing nets, harbor common nets, and tug control nets.

**T - Transmit Only:** The following nets receive a "T" guard key because the net is a transmit-only net, the transmit side of a duplex net, or an uplink: transmit side of DWTS, homer beacon net, and SATCOM uplinks.

**W - When Directed:** The following nets receive a "W" guard key because the net is in standby until the Net Control Station (NECOS) directs that net be guarded: secondary command nets and tertiary command nets.

During the finalization of the OPTASK COMM, the Communication Planner ensures the appropriate guard key is assigned to all nets, according to the guidance from the proper authority and the equipment capability of each ship in the strike group. The proper assignment of guard requirements to nets reduces the incidence of oversubscribed nets on ships in the strike groups. AESOP performs a net connectivity analysis on the nets based on the guard requirements. This analysis provides the Communication Planner insight on the quality of the connection.